

## **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1. (Previously Presented) A method for managing multiple resources in a system, comprising:
  - receiving a user request to generate a configuration policy;
  - in response to the user request, locating the multiple resources in the system, wherein each resource has an API including methods for configuring that resource and the system has, for each resource, at least one element that can call selected methods in the API of that resource to place that resource in a predetermined configuration;
  - receiving user selection of a set of the multiple resources;
  - for each resource in the selected set, querying all elements to locate elements for that resource and displaying resource configurations produced by the located elements;
  - receiving user selection of a resource configuration corresponding to one element for each selected resource in the set; and
  - from the user selection of resource configurations, creating a configuration policy that calls an element for each resource in the selected set in order to cause that element to call API methods of that resource to place that resource in a predetermined configuration.
2. (Previously Presented) The method of claim 1, further comprising:
  - displaying a first user interface enabling the user to select the set of the multiple resources to include in the configuration policy; and
  - displaying a second user interface enabling the user to select the one resource configuration for each resource in the set.

1 3. (Previously Presented) The method of claim 1, wherein the multiple resources  
2 include a storage device, a switch, a host adaptor, and a volume manager,  
3 wherein the elements managing the storage device allocate storage space to a  
4 host, wherein the elements managing the switch are capable of allocating at least  
5 one path in the switch to the storage device to allow the host to access the  
6 allocated storage space, wherein the elements managing the host adaptors  
7 allocate at least one host adaptor in the host to communicate with the switch to  
8 access the allocated storage space, and wherein the elements managing the  
9 volume manager assign the allocated storage space in the device to a requested  
10 logical volume used by the host.

1 4. (Previously Presented) The method of claim 3, wherein the system is capable of  
2 including multiple storage devices, switches, and host adaptors in the host, and  
3 wherein there is at least one separate element to configure each storage device  
4 and switch in the system.

1 5. (Original) The method of claim 1, wherein each of multiple elements provided for  
2 one resource define a different configuration of the resource.

1 6. (Original) The method of claim 1, wherein determining the at least one element  
2 for each resource comprises:  
3 using interfaces in a lookup service proxy object to query element proxy  
4 objects to determine a name for each of the element proxy objects.

1 7. (Original) The method of claim 6, further comprising:  
2 displaying at least one selectable list of the names of each of the element  
3 proxy objects for each resource, wherein the user selects one element for each  
4 resource from the selectable lists.

1 8. (Previously Presented) A method for configuring multiple resources in a system,  
2 comprising:

3 receiving user selection of one of multiple configuration policies, wherein  
4 each configuration policy defines resources to configure, each of the resources  
5 having an API including methods for configuring that resource, and one element  
6 for each resource to configure, wherein each element specifies configuration  
7 parameters to use to configure the resource and can call selected methods in the  
8 API of the resource with the configuration parameters to place the resource in a  
9 predetermined configuration;

10 receiving user selection of an instance of one resource to configure,  
11 wherein the user selected resource instance is capable of being configured by  
12 the configuration policy;

13 determining additional resource instances that are configured by the  
14 selected configuration policy; and

15 calling the elements defined for the selected configuration policy which, in  
16 turn, call the API methods of the user selected resource in order to configure the  
17 user selected resource instance and the determined additional resource  
18 instances according to the element configuration parameters.

1 9. (Original) The method of claim 8, further comprising:

2 displaying a first interface listing the multiple configuration policies,  
3 wherein the user selects one configuration policy from the list; and

4 displaying at a second interface enabling the user to select the instance of  
5 the resource to configure.

1 10. (Original) The method of claim 8, further comprising:

2 querying information indicating the resource instances available for the  
3 configuration, wherein the information indicates the connectedness of the  
4 resource instances, wherein the determined additional resource instances are  
5 connected.

1 11. (Previously Presented) The method of claim 8, wherein one of the resources to  
2 configure comprises a storage device further comprising:

3 using an element for the storage device to query the device to determine  
4 available storage space at each storage device instance that is available to the  
5 user selected resource instance;

6 receiving user selection of an amount of storage space to allocate; and  
7 determining one storage device instance including the user selected  
8 amount of storage space, wherein calling the elements to configure each user  
9 selected resource further comprises calling a storage element to configure the  
10 determined storage device instance to allocate the user selected amount of  
11 storage space to the configuration.

1 12. (Original) The method of claim 11, further comprising:

2 displaying a storage allocation interface displaying the available storage  
3 space, wherein the user enters the selected amount of storage space through the  
4 displayed allocation interface.

1 13. (Original) The method of claim 8, wherein the multiple resources include a  
2 storage device and a host adaptor, and wherein the user selected resource  
3 comprises a host including at least one host adaptor, and wherein the  
4 determined additional resources instances comprise one instance of the host  
5 adaptor and storage device resources.

1 14. (Original) The method of claim 13, wherein the multiple resources further include  
2 a switch, and wherein the determined additional resources instances further  
3 include one instance of the switch resource.

1 15. (Original) The method of claim 13, wherein determining the instance of the host  
2 adaptor and storage device comprises querying information indicating host  
3 adaptor and storage device instances capable of being configured according to  
4 the configuration parameters and the topology of the host adaptor and storage  
5 device instances, and wherein the determined host adaptor and storage device  
6 instances to use in the configuration are connected.

1 16. (Original) The method of claim 15, wherein the multiple resources further include  
2 a switch, and wherein the determined additional resources instances further  
3 include one instance of the switch resource, wherein the determined switch  
4 instance is in a path between the determined host adaptor and storage device  
5 instances.

1 17. (Original) The method of claim 16, wherein the element managing the storage  
2 device allocates storage space to the host, wherein the element managing the  
3 switch is capable of allocating at least one path in the switch to the storage  
4 device to allow the host to access the allocated storage space, wherein the  
5 element managing the host adaptors allocates at least one host adaptor in the  
6 host to communicate with the switch to access the allocated storage space.

1 18. (Original) The method of claim 8, wherein each of multiple elements provided for  
2 one resource define a different configuration of the resource.

1 19. (Original) The method of claim 8, further comprising:  
2 querying configuration policy proxy objects in a lookup service to  
3 determine configuration policies;  
4 displaying a user interface listing the determined configuration policies,  
5 wherein the user selects one of the configuration policies from the list;  
6 downloading the configuration policy proxy object for the selected configuration  
7 policy from the lookup service; and  
8 using an interface in the downloaded configuration policy proxy object to  
9 call the elements for each resource to configure the user selected and additional  
10 resource instances according to the element configuration.

1 20. (Original) The method of claim 8, wherein determining the additional instances of  
2 the resource further comprises:

3            querying attributes associated with a proxy object in a lookup service for  
4            the user selected configuration policy to determine resource instances capable of  
5            being configured by the selected configuration policy.

1    21.    (Previously Presented) A system for managing multiple resources, comprising:  
2            a computer readable medium including at least one element for each of  
3            the managed resources in the system, wherein each resource has an API  
4            including methods for configuring that resource and wherein each element can  
5            call selected methods in the API of one resource to place that resource in a  
6            predetermined configuration in the system;

7            means for receiving a user request to generate a configuration policy;

8            means responsive to the user request for locating multiple resources in  
9            the system;

10          means for receiving user selection of a set of the multiple resources;

11          means for querying all elements to locate elements for each selected  
12          resource in the set and displaying resource configurations produced by the  
13          located elements;

14          means for receiving user selection of a resource configuration  
15          corresponding to one element for each selected resource in the set; and

16          means responsive to the user selection of resource configurations for  
17          creating a configuration policy that calls an element for each resource in the  
18          selected set in order to cause that element to call API methods of that resource  
19          to place that resource in a predetermined configuration.

1    22.    (Previously Presented) The system of claim 21, further comprising:

2            means for displaying a first user interface enabling the user to select the  
3            set of the multiple resources to include in the configuration policy; and

4            means for displaying a second user interface enabling the user to select  
5            the one resource configuration for each resource in the set.

1 23. (Previously Presented) The system of claim 21, wherein the multiple resources  
2 include a storage device, a switch, a host adaptor, and a volume manager,  
3 wherein the elements managing the storage device allocate storage space to a  
4 host, wherein the elements managing the switch are capable of allocating at least  
5 one path in the switch to the storage device to allow the host to access the  
6 allocated storage space, wherein the elements managing the host adaptors  
7 allocate at least one host adaptor in the host to communicate with the switch to  
8 access the allocated storage space, and wherein the elements managing the  
9 volume manager assign the allocated storage space in the device to a requested  
10 logical volume used by the host.

1 24. (Previously Presented) The system of claim 31, wherein the managed resources  
2 are capable of including multiple storage devices, switches, and host adaptors in  
3 the host, and wherein there is at least one separate element in the computer  
4 readable medium to configure each storage device and switch in the system.

1 25. (Original) The system of claim 21, wherein each of multiple elements provided for  
2 one resource define a different configuration of the resource.

1 26. (Original) The system of claim 21, wherein the computer readable medium  
2 further includes element proxy objects and a lookup service proxy object, and  
3 wherein the means for determining the at least one element for each resource  
4 performs:  
5 using interfaces in the lookup service proxy object to query element proxy  
6 objects to determine a name for each of the element proxy objects.

1 27. (Original) The system of claim 26, further comprising:  
2 means for displaying at least one selectable list of the names of each of  
3 the element proxy objects for each resource, wherein the user selects one  
4 element for each resource from the selectable lists.

1 28. (Previously Presented) A system for configuring multiple resources, each of the  
2 resources having an API including methods for configuring that resource,  
3 comprising:

4 a computer readable medium including:

5 (i) at least one element for each of the managed resources in  
6 the system, wherein each element is capable of managing one of the  
7 resources in the system, and wherein each element specifies  
8 configuration parameters to use to configure the resource and can call  
9 selected methods in the API of the resource with the configuration  
10 parameters to place the resource in a predetermined configuration;

11 (ii) configuration policies, wherein each configuration policy  
12 defines resources to configure and one element for each resource to  
13 configure;

14 means for receiving user selection of one of the configuration policies,  
15 means for receiving user selection of an instance of one resource to  
16 configure, wherein the user selected resource instance is capable of being  
17 configured by the configuration policy;

18 means for determining additional resource instances that are configured  
19 by the selected configuration policy; and

20 means for calling the elements defined for the selected configuration  
21 policy which, in turn, call the API methods of the user selected resource in order  
22 to configure the user selected resource instance and the determined additional  
23 resource instances according to the element configuration parameters.

1 29. (Original) The system of claim 28, further comprising:

2 means for displaying a first interface listing the multiple configuration  
3 policies, wherein the user selects one configuration policy from the list; and

4 means for displaying at a second interface enabling the user to select the  
5 instance of the resource to configure.



- 1 30. (Original) The system of claim 28, further comprising:  
2 means for querying information indicating the resource instances available  
3 for the configuration, wherein the information indicates the connectedness of the  
4 resource instances, wherein the determined additional resource instances are  
5 connected.
- 1 31. (Previously Presented) The system of claim 28, wherein one of the resources to  
2 configure comprises a storage device further comprising:  
3 means for using an element for the storage device to query the device to  
4 determine available storage space at each storage device instance that is  
5 available to the user selected resource instance;  
6 means for receiving user selection of an amount of storage space to  
7 allocate; and  
8 means for determining one storage device instance including the user  
9 selected amount of storage space, wherein the means for calling the elements to  
10 configure each user selected resource further performs calling a storage element  
11 to configure the determined storage device instance to allocate the user selected  
12 amount of storage space to the configuration.
- 1 32. (Original) The system of claim 31, further comprising:  
2 means for displaying a storage allocation interface displaying the available  
3 storage space, wherein the user enters the selected amount of storage space  
4 through the displayed allocation interface.
- 1 33. (Original) The system of claim 28, wherein the multiple resources include a  
2 storage device and a host adaptor, and wherein the user selected resource  
3 comprises a host including at least one host adaptor, and wherein the  
4 determined additional resources instances comprise one instance of the host  
5 adaptor and storage device resources.

- 1 34. (Original) The system of claim 33, wherein the multiple resources further include  
2 a switch, and wherein the determined additional resources instances further  
3 include one instance of the switch resource.
- 1 35. (Original) The system of claim 33, wherein the means for determining the  
2 instance of the host adaptor and storage device queries information indicating  
3 host adaptor and storage device instances capable of being configured according  
4 to the configuration parameters and the topology of the host adaptor and storage  
5 device instances, and wherein the determined host adaptor and storage device  
6 instances to use in the configuration are connected.
- 1 36. (Original) The system of claim 35, wherein the multiple resources further include  
2 a switch, and wherein the determined additional resources instances further  
3 include one instance of the switch resource, wherein the determined switch  
4 instance is in a path between the determined host adaptor and storage device  
5 instances.
- 1 37. (Original) The system of claim 36, wherein the element managing the storage  
2 device allocates storage space to the host, wherein the element managing the  
3 switch is capable of allocating at least one path in the switch to the storage  
4 device to allow the host to access the allocated storage space, wherein the  
5 element managing the host adaptors allocates at least one host adaptor in the  
6 host to communicate with the switch to access the allocated storage space.
- 1 38. (Original) The system of claim 28, wherein each of multiple elements provided for  
2 one resource define a different configuration of the resource.
- 1 39. (Original) The system of claim 28, further comprising:  
2 means for querying configuration policy proxy objects in a lookup service  
3 to determine configuration policies;

4 means for displaying a user interface listing the determined configuration  
5 policies, wherein the user selects one of the configuration policies from the list;  
6 means for downloading the configuration policy proxy object for the  
7 selected configuration policy from the lookup service; and  
8 means for using an interface in the downloaded configuration policy proxy  
9 object to call the elements for each resource to configure the user selected and  
10 additional resource instances according to the element configuration.

1 40. (Original) The system of claim 28, wherein the means for determining the  
2 additional instances of the resource further performs:  
3 querying attributes associated with a proxy object in a lookup service for  
4 the user selected configuration policy to determine resource instances capable of  
5 being configured by the selected configuration policy.

1 41. (Previously Presented) An article of manufacture including code for managing  
2 multiple resources in a system by:  
3 receiving a user request to generate a configuration policy;  
4 in response to the user request, locating the multiple resources in the  
5 system, wherein each resource has an API including methods for configuring that  
6 resource and the system has, for each resource, at least one element that can  
7 call selected methods in the API of that resource to place that resource in a  
8 predetermined configuration;  
9 receiving user selection of a set of the multiple resources;  
10 for each resource in the selected set, querying all elements to locate  
11 elements for that resource and displaying resource configurations produced by  
12 the located elements;  
13 receiving user selection of a resource configuration corresponding to one  
14 element for each selected resource in the set; and  
15 from the user selection of resource configurations, creating a configuration  
16 policy that calls an element for each resource in the selected set in order to

17 cause that element to call API methods of that resource to place that resource in  
18 a predetermined configuration.

1 42. (Previously Presented) The article of manufacture of claim 41, further comprising:  
2 displaying a first user interface enabling the user to select the set of the  
3 multiple resources to include in the configuration policy; and  
4 displaying a second user interface enabling the user to select the one  
5 resource configuration for each resource in the set.

1 43. (Previously Presented) The article of manufacture of claim 41, wherein the  
2 multiple resources include a storage device, a switch, a host adaptor, and a  
3 volume manager, wherein the elements managing the storage device allocate  
4 storage space to a host, wherein the elements managing the switch are capable  
5 of allocating at least one path in the switch to the storage device to allow the host  
6 to access the allocated storage space, wherein the elements managing the host  
7 adaptors allocate at least one host adaptor in the host to communicate with the  
8 switch to access the allocated storage space, and wherein the elements  
9 managing the volume manager assign the allocated storage space in the device  
10 to a requested logical volume used by the host.

1 44. (Previously Presented) The article of manufacture of claim 43, wherein the  
2 system is capable of including multiple storage devices, switches, and host  
3 adaptors in the host, and wherein there is at least one separate element to  
4 configure each storage device and switch in the system.

1 45. (Original) The article of manufacture of claim 41, wherein each of multiple  
2 elements provided for one resource define a different configuration of the  
3 resource.

1 46. (Original) The article of manufacture of claim 41, wherein determining the at least  
2 one element for each resource comprises: using interfaces in a lookup service

proxy object to query element proxy objects to determine a name for each of the element proxy objects.

47. (Original) The article of manufacture of claim 46, further comprising: displaying at least one selectable list of the names of each of the element proxy objects for each resource, wherein the user selects one element for each resource from the selectable lists.

48. (Previously Presented) An article of manufacture method for configuring multiple resources in the system by:

- receiving user selection of one of multiple configuration policies, wherein each configuration policy defines resources to configure, each of the resources having an API including methods for configuring that resource, and one element for each resource to configure, wherein each element specifies configuration parameters to use to configure the resource and can call selected methods in the API of the resource with the configuration parameters to place the resource in a predetermined configuration;
- receiving user selection of an instance of one resource to configure, wherein the user selected resource instance is capable of being configured by the configuration policy;
- determining additional resource instances that are configured by the selected configuration policy; and
- calling the elements defined for the selected configuration policy which, in turn, call the API methods of the user selected resource in order to configure the user selected resource instance and the determined additional resource instances according to the element configuration parameters.

49. (Original) The article of manufacture of claim 48, further comprising:

- displaying a first interface listing the multiple configuration policies, wherein the user selects one configuration policy from the list; and

4 displaying at a second interface enabling the user to select the instance of  
5 the resource to configure.

1 50. (Original) The article of manufacture of claim 48, further comprising:

2 querying information indicating the resource instances available for the  
3 configuration, wherein the information indicates the connectedness of the  
4 resource instances, wherein the determined additional resource instances are  
5 connected.

1 51. (Previously Presented) The article of manufacture of claim 48, wherein one of the  
2 resources to configure comprises a storage device further comprising:

3 using an element for the storage device to query the device to determine  
4 available storage space at each storage device instance that is available to the  
5 user selected resource instance; receiving user selection of an amount of storage  
6 space to allocate; and

7 determining one storage device instance including the user selected  
8 amount of storage space, wherein calling the elements to configure each user  
9 selected resource further comprises calling a storage element to configure the  
10 determined storage device instance to allocate the user selected amount of  
11 storage space to the configuration.

1 52. (Original) The article of manufacture of claim 51, further comprising:

2 displaying a storage allocation interface displaying the available storage  
3 space, wherein the user enters the selected amount of storage space through the  
4 displayed allocation interface.

1 53. (Original) The article of manufacture of claim 48, wherein the multiple resources

2 include a storage device and a host adaptor, and wherein the user selected  
3 resource comprises a host including at least one host adaptor, and wherein the  
4 determined additional resources instances comprise one instance of the host  
5 adaptor and storage device resources.

- 1 54. (Original) The article of manufacture of claim 53, wherein the multiple resources  
2 further include a switch, and wherein the determined additional resources  
3 instances further include one instance of the switch resource.
- 1 55. (Original) The article of manufacture of claim 53, wherein determining the  
2 instance of the host adaptor and storage device comprises querying information  
3 indicating host adaptor and storage device instances capable of being configured  
4 according to the configuration parameters and the topology of the host adaptor  
5 and storage device instances, and wherein the determined host adaptor and  
6 storage device instances to use in the configuration are connected.
- 1 56. (Original) The article of manufacture of claim 55, wherein the multiple resources  
2 further include a switch, and wherein the determined additional resources  
3 instances further include one instance of the switch resource, wherein the  
4 determined switch instance is in a path between the determined host adaptor and  
5 storage device instances.
- 1 57. (Original) The article of manufacture of claim 56, wherein the element managing  
2 the storage device allocates storage space to the host, wherein the element  
3 managing the switch is capable of allocating at least one path in the switch to the  
4 storage device to allow the host to access the allocated storage space, wherein  
5 the element managing the host adaptors allocates at least one host adaptor in  
6 the host to communicate with the switch to access the allocated storage space.
- 1 58. (Original) The article of manufacture of claim 48, wherein each of multiple  
2 elements provided for one resource define a different configuration of the  
3 resource.
- 1 59. (Original) The article of manufacture of claim 48, further comprising:

2                querying configuration policy proxy objects in a lookup service to  
3                determine configuration policies;  
4                displaying a user interface listing the determined configuration policies,  
5                wherein the user selects one of the configuration policies from the list;  
6                downloading the configuration policy proxy object for the selected  
7                configuration policy from the lookup service; and  
8                using an interface in the downloaded configuration policy proxy object to  
9                call the elements for each resource to configure the user selected and additional  
10               resource instances according to the element configuration.

1    60.    (Original) The article of manufacture of claim 48, wherein determining the  
2               additional instances of the resource further comprises:  
3                      querying attributes associated with a proxy object in a lookup service for  
4               the user selected configuration policy to determine resource instances capable of  
5               being configured by the selected configuration policy.